

37. A new Spider of the Genus *Liphistius* from the Malay Peninsula, and some Observations on its Habits. By H. C. ABRAHAM, F.Z.S., F.L.S.

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(Plate I.; Text-figure 1.)

I have recently received, through the courtesy of Mr. F. de la Mare Norris, of the Department of Agriculture, Federated Malay States, a specimen* of the female of a large species of *Liphistius*, together with the trap-door and portion of the silk lining of its burrow, photos of the burrow *in situ*, and notes of a number of observations on the habits of the spider.

In the preamble of a former paper † I mentioned having seen a photo of the present species, and, at that time, I was under the impression that it would turn out to be *L. birmanicus* Simon, but since I have had the opportunity of examining the spider itself I have, rather reluctantly, come to the conclusion that it must be referred to a new species which appears, however, to be very closely related to the above-mentioned.

My reasons for this are, briefly, as follows:—

(a) In *birmanicus* the legs of the 1st, 2nd, and 3rd pairs are subequal, the difference in length (coxae excluded) between legs i and iii being only 1 mm., with a difference of 0.25 mm. between i and ii; whilst in the species described below the difference between i and iii is 4.8 mm., whilst that between legs i and ii is 0.7 mm.

(b) In *birmanicus* the 4th leg is rather less than 3 times as long as the cephalothorax, in my specimen it is nearly 3.5 times as long. Similarly, the 1st leg is nearly 2.25 times as long as the cephalothorax, instead of slightly over twice, which is the case in *birmanicus*.

(c) The palp (♀) is nearly twice as long as the cephalothorax instead of being a little more than 1.5 times as long.

(d) The superior claws of the legs have 2-3 teeth instead of 3-4; also the inferior claws of the legs and the palpal claws have 1-2 very small teeth instead of 2-3 small ones.

In other words the legs and palpi are much longer in proportion to the size of the cephalothorax than is the case in *L. birmanicus*, and furthermore there is a greater diversity in the lengths of the legs, especially noticeable in those of 1st, 2nd, and 3rd pairs.

* Unfortunately in a somewhat damaged condition.

† "A New Spider of the Genus *Liphistius*," Journ. Malayan Branch, Royal Asiatic Soc. i. p. 13 (1923).

Before going on to the detailed description of the spider for which, as it appears reasonable to suppose that it is the usual jungle species of the genus in the southern part of the Malay Peninsula, I propose the name *Liphistius malayanus*, I wish to record my indebtedness and express my thanks to Messrs. H. R. Hogg and F. de la Mare Norris; to the former for much help and advice, and to the latter for having given me the opportunity of examining and writing up this extremely interesting spider as well as for kindly allowing me to make use of the excellent photos which illustrate the description of the burrow and trap-door.

Family LIPHISTIIDÆ.

Genus LIPHISTIUS Schiödte.

Liphistius Schiödte, in Kröyer Naturh. Tijdsk. 2, ii. p. 621 (1849); Simon, Hist. Nat. des Ar. i. p. 64 (1892), ii. p. 875 (1903).

LIPHISTIUS MALAYANUS, sp. n.

Female.—*Colour*: Cephalothorax and mandibles black; fangs dark reddish brown; labium and coxæ of palpi brownish; coxæ and sternum dark grey, nearly black; legs and palpi black above, dark grey (nearly black) below, with undersides of "joints" nearly white and sides of femora greenish; abdomen black, opercula and fringes of spinnerets brown.

Cephalothorax.—About $1\frac{1}{4}$ times as long as broad, narrower in front than behind, with the cephalic region rather more elevated than is shown in Cambridge Natural History, Arachnida, fig. 201, p. 386, or Fauna Brit. Ind., Arach., fig. 52, p. 155. There are signs of a longitudinal series of bristles having existed on the caput, behind the ocular tubercle. A number of bristles also project forward from the anterior margin, below the ocular tubercle, the median ones being by far the longest.

Eyes.—Closely grouped on a circular tubercle which is higher in front than behind and situated close to the front margin of the cephalothorax on a distinct declivity (text-fig. 1 a & b).

The anterior laterals are considerably larger than the rest, semicircular in shape, and contiguous, with their lower margins occupying all the front half of the margin of the tubercle; the posterior laterals, next in size, touch the hind margins of the anterior laterals, are also nearly semicircular but rather pointed behind, and occupy the remainder of each side of the tubercle; the posterior medians are oval, rather pointed behind, and about $\frac{1}{4}$ as wide as long, they are situated above and between the posterior laterals with their rear ends level with the middle of the latter and the front edges a little in advance of the level of the hind margins of the anterior laterals; the anterior medians

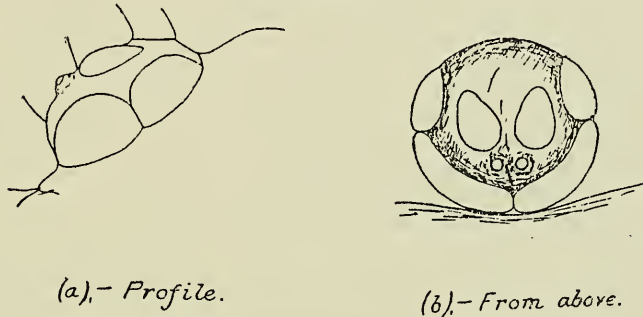
are quite small, between the front margin of the posterior medians and the upper edge of the anterior laterals and separated by about their own diameter from each other and from the front of the posterior medians: they are each placed on the top of a small tubercle (text-fig. 1 *a*).

The eyes are brown except the anterior medians which are black.

The ocular tubercle has a longitudinal median row of 4 or 5 curved bristles, and there are two more bristles near the inner hind margin of each posterior lateral eye.

Mandibles.—Stout, about $\frac{2}{5}$ as long as the cephalothorax. The falx is strongly arched anteriorly, strongly convex on the outside but hollowed at the base towards the lower edge, the inner surface is flat. The anterior and upper surfaces are clothed with slightly curved bristles which are longest along the inner front margin.

Text-figure 1.



Eyes of *Liphistius malayanus*, sp. n.

The fang-groove has a fringe of reddish hair; the inner margin is armed with 10 or 11 stout, bluntly-conical teeth, of which the 2nd, 4th, and 8th are larger than the remainder, which are irregular in size.

The fang is slightly curved, long, and stout, with slight longitudinal striations along its upper surface.

Labium.—About twice as broad as long, the length being equal to the breadth of the anterior margin of the sternum. It is rounded anteriorly and provided with numerous slender curved bristles. It is sunk below the level of the coxæ, of which the basal ends of the 1st pair close in behind it.

Sternum.—Long and narrow, and sunk much below the level of the coxæ of the legs, of which the basal ends approach one another over it; about $3\frac{1}{2}$ times as long as its greatest breadth, which occurs between coxæ ii and iii. In the only specimen

available the posterior end of the sternum is somewhat damaged, but the remaining part appears to have been clothed with bristles.

Legs.—Compressed so as to make them squarish in section, this is particularly noticeable in the femora, metatarsi, and tarsi; clothed with numerous black bristles arranged in longitudinal rows. In addition to this there are a number of spines which are distributed as follows :—

The femora have two on the upper surface near the apex and a row along each lower margin.

The patellæ have a row along the anterior upper margin, those at the apex being the longest and curved.

The tibiæ have a series along each lower margin (5 in i and iii, 6 in ii, and 4, much finer, in iv; the basal one in each case much smaller than the others), as well as an apical spine on each side and a number of curved ones along the front margins.

The metatarsi of the 1st and 2nd pairs have 7 stout spines along each lower margin, and one at the apex on the inner side; on the 3rd and 4th pairs there is, in addition, an apical spine on the outer side and 3, rather finer, along each upper margin.

The tarsi have a row of stout spines along each lower margin (7 or 8 along the front, 6 or 7 along the posterior); there are also 3 or 4 small spines in a transverse row on the underside at the base and about 4, also small, arranged in a V just below the inferior claw and apparently intended to fulfil, to some degree, the functions of unguis tufts or scopulæ.

The superior tarsal claws are long, well curved, and stout; they are armed on the basal half with 3 teeth, except in the outer one of the 1st and 2nd legs, where there are only 2 teeth; in the claws of the 4th pair all the teeth are long, sharp, and subequal, but in the other cases where 3 teeth occur the basal one is very small.

The inferior tarsal claws are armed with 1 or 2 very small teeth.

Palpi.—Very similar to the legs both in general appearance and armament.

The coxæ have a thick fringe of long reddish curved hair along the inner margins.

The femora have a series of slender spines along each margin of the underside, as well as a single spine near the base and 2 or 3 near the apex on the upper surface.

The patellæ have a spine on the lower inner margin near the distal end and also show signs of having had 2 or 3 on the upper surface near the apex.

The tibiæ have 5 stout spines along each margin of the underside, and also have a series of 3 along the inner surface.

The tarsi have 7 long stout spines along each margin of their lower surfaces.

The claw is stout, slightly curved, and armed with 2 very small teeth near the base.

Abdomen.—Apparently oval in shape and about $1\frac{1}{2}$ times as long as wide (the abdomen of the only available specimen is, however, somewhat shrivelled, so that these proportions may not be accurate). It is furnished with 9 distinct dorsal terga, and there is a rudimentary 10th one midway between the 9th and the anal tubercle. The 4th tergum is the largest and the 9th the smallest. The sides and lower surface of the abdomen are wrinkled and thickly clad with bristly hairs; there are signs also of the terga having been armed with bristles along their posterior margins.

The spinnerets form a compact group about the middle of the lower surface of the abdomen, the base of the anteriors being almost exactly midway between the base of the abdomen and the anal tubercle. They are typical in form with the basal segment of the posterior laterals about half the diameter of that of the anterior laterals, and the anterior medians a little larger than the posterior medians. The apical segments of the laterals are divided into about 12 false articulations. The anterior laterals are separated at the base by about half their basal diameter; and their apices reach a point halfway between the anterior margin of their base and the anal tubercle. The anterior medians are close together and just in front of the anterior laterals, whilst the posterior medians, also contiguous, are situated between the two pairs of laterals. The bases of the posterior laterals are close together and their distal extremities are curved inwards similarly to those of the anterior laterals. The inner margin of the apical segments of all the laterals is furnished with a fringe of coarse brownish hair.

The anal tubercle is conical, clothed with black bristles and situated a little way in front of the posterior end of the abdomen.

Measurements (mm.).

	Length.	Breadth.
Cephalothorax	13.2	10.6
Abdomen	13.2	(8.6)*
Falx	5.5	...

	Lengths of	Coxæ.	Tr. & fem.	Pat. & tib.	Met. & tar.	Totals.
Legs I		6.0	10.3	10.6	8.2	35.1
II		5.7	10.2	10.6	9.0	35.5
III		6.0	11.6	11.2	11.1	39.9
IV		6.4	14.3	13.4	17.5	51.6
Palpi		4.5	9.3	9.4	6.0	29.2

* Approximate only, abdomen somewhat shrivelled.

*Habits**.—This spider inhabits web-lined burrows fitted with a trap-door of the wafer type. The burrows, which are about 28 mm. in diameter and 400 to 450 mm. long, are found, from the examination of about 20 examples, to be horizontal in general direction, but usually are somewhat bent so that a straight stick cannot be thrust in very far; they are unbranched and the inner end is somewhat enlarged. The trap-door is invariably hinged to the mouth of the tube at the upper edge, and another very interesting fact is that the lines of web, which in *L. batuensis* Abr. are employed to support the nest upon the vertical cave-walls †, are by the present species used to keep the web-lining stretched over the edge of the burrow so as to form a "lip" against which the lid can close down tightly; this may be seen very clearly in Plate I. fig. 2, in which the lid is shown in the opened position. All the burrows found so far have had their openings on practically bare banks with perhaps a few small ferns, etc. growing near, but, as all bare banks in this country are artificial cuttings, and those in question have been made within the last 20 years or so, it is almost certain that the spider must live in the jungle on the neighbouring hills. The trap-doors of the observed burrows all have small stones and particles of earth woven into them.

The spider appears to be entirely nocturnal, as pins placed in front of the entrances of burrows were never disturbed during the day, but have always been pushed out of position during the night; the spider also seems quite "lost" in bright light. It does not appear to be common as, in annual visits to the hill upon which it was found from 1918 to 1922 inclusive, only comparatively few individuals—not more than about 20 altogether—have been observed. As is generally the case with burrowing spiders, *L. malayanus* occupies the same nest for a long time; in fact, it probably does not change its quarters unless forced to do so.

Locality.—Gunong Angsi, Negri Sembilan, F.M.S.; 2500 feet. December 1922 (coll. Mr. F. de la Mare Norris).

Specimens examined.—One adult female, which I have sent to the British Museum, Natural History Department ‡.

* From notes of his field observations kindly supplied by Mr. F. de la Mare Norris.

† Abraham, *l. c. supra*, p. 19, and plate i. fig. 2.

‡ Together with its trap-door.